

Annex 3.B. Economic and Financial Analysis (assumption and parameters)

A. General objective

The main aim of the ex-ante Financial and Economic Analysis (EFA) is to examine the financial and economic viability of the entire project operation considering the different BIOCLIMA's components. In addition, the analysis evaluates the feasibility of the investment on the production models that will be financed by the Project under the component 1 and assesses their potential for increased producer's profitability and income.

B. Methodology

- A detailed and incremental ex-ante cost-benefit analysis was conducted covering a 20-year period, based on the secondary data collected. The Internal Rate of Return (IRR), Net Present Value, Benefit/Cost ratio and payback period were calculated from a financial and economic perspective, using market and economic prices, respectively. For the economic analysis, conversion factors for Nicaragua, estimated by the National System of Public Investment (SNIP, in Spanish abbreviation) were used to transform market prices into economic prices and a discount rate of 12.67 percent.
- For the purpose of the financial and economic analysis of the proposed production models, that will be financed under the component 1, incremental benefits and costs were estimated comparing a with project situation vs without project situation for each model. These results were used to calculate the individual cash flow per hectare, which included the carbon value at market and social prices as result of the ecosystem services of the improved productive systems. The EFA indicators of each type of model were estimated considering the cash flows.
- Based on the results of the above-mentioned analysis, aggregated incremental income and cost flows were calculated for the extrapolation of results among total investment by multiplying the total number of hectares to be supported by BIOCLIMA. Aggregation of the investment on component 1, 2, 3 and project cost were added to the aggregate cash flow for estimating the overall financial and economic indicators.
- Sensitivity analysis was conducted to evaluate the impacts of hypothetical changes of key investment variables such as producer's income and costs, investment level and emission reduction targets

C. General assumption and parameters (see annex 3.A, spreadsheet II.A)

- Incremental analysis comparing a with and without project situation
- All calculation in terms of nominal prices
- Referencial discount rate for Nicaragua: 8%
- Evaluation period: 20 years
- BIOCLIMA's Implementation period: 7 years
- GEF implementation period: 7 years
- ERPD implementation period: 5 years
- Ecosystem service: reduction emission as result of avoided emissions and carbon removal
- Carbon market prices: 5 USD/tCO₂ eq
- Carbon social prices: 30 USD/tCO₂ eq

- Sensitivity analysis: hypothetical changes from +20% to -20% of key investment variables
- Conversion factor from carbon market to social prices

Variables to convert market prices to social prices	Conversion factor
Social price of the currency	1.05
Social price of labour (not skilled with employment)	0.83
Social price of labour (skilled)	0.82
General indirect tax	15%
Correction factor for national goods (in costs) - from private to social price	0.87
Correction factor for national goods (in production) - from private to social price (in costs)	1

D. Specific assumptions and parameters for productive models (See annex 3.A, VIII. G – R, IX. A, B)